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ABSTRACT

This first report in the 1974-75 Michigan Educational Assessment Program presents the objectives of the assessment program and indicates in detail some of the specific procedures to be used. The program provides achievement measures for grades one, four, and seven. The measures at all three grades are objective-referenced tests constructed through cooperative efforts of selected school districts, technical support contractors, and the Department of Education. For grade one assessment, introduced as a pilot project, there were 44 separate tests measuring 48 pre-primary performance objectives in the cognitive, affective, and psychomotor domains. The objectives tested are included as Appendix C. The fourth and seventh grade testing program measures student achievement of performance objectives in reading and math. The objectives are appended. Attitude and Word Relationships tests are optional in this year's program. A special feature of the 1974-75 program is the inclusion of experimental items in science and mathematics for grade four and seven. Procedural guidelines include such topics as testing dates, local district responsibility, materials shipment, students to be tested, reporting results, and so forth. (RC)

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OBJECTIVES AND PROCEDURES

The First Report of the 1974-75 Michigan
Educational Assessment Program

Prepared by the

Michigan Educational Assessment Program

Research, Evaluation and Assessment Services

August, 1974

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FOREWORD

The Michigan Educational Assessment Program (MEAP) was initiated by the State Board of Education, supported by the Governor, and funded by the Legislature initially through enactment of Act 307 of the Public Acts of 1969, and subsequently under Act 38 of the Public Acts of 1970.

This report is the first in the 1974-75 series. It presents the objectives of the assessment program and indicates in detail some of the specific procedures to be used in the current year. At the end of the report is a list of selected program publications which are available in single copies upon request.

The State Board of Education has adopted a six-step educational management system as a guide for improving Michigan education. The six steps are: the identification of common goals, the development of performance objectives, the assessment of educational needs, the analysis of delivery systems, the evaluation and testing of these systems or programs, and recommendations for educational improvement. This report presents information for the third step--the assessment of educational needs. Though its major purpose is to provide information for state decision-makers, educational assessment also provides general information on student and system needs which, along with other information gathered by local educators, will assist them in identifying the needs of local schools and pupils.

Thanks are due to a large number of individuals and groups for making the Michigan Educational Assessment Program a reality and for continuing to work with it in its sixth year, 1974-75: to the State Board of Education for initially proposing it and continuing to support it, to the Governor and Legislature for actively supporting it, and to Michigan educators for assisting with it. The program was designed and administered by the Research, Evaluation, and Assessment Services Unit, Michigan Department of Education, with the assistance of Westinghouse Learning Corporation/Measurement Research Center of Iowa City, Iowa, and the advice of the Research, Evaluation, and Assessment Services Advisory Council.

This report was prepared by Dr. Thomas H. Fisher and Dr. Edward D. Roeber with the assistance of Dr. David L. Donovan, Mr. Robert J. Huyser, and Mrs. June Olsen. Questions or requests for additional information relative to this report should be directed to the educational assessment staff.

John W. Porter
Superintendent
Public Instruction

INTRODUCTION

For the last few years, the State Board of Education has encouraged Michigan educators to improve their educational operations and programs through better planning methods. The Board has adopted a six-step educational management system consisting of: (1) the identification of common goals, (2) the development of performance objectives, (3) assessment of needs, (4) analysis of delivery systems, (5) evaluation, and (6) recommendations for improvement. These six steps were described in detail in the 1971-72 edition of Objectives and Procedures and other Department publications and will not be repeated here.[1]

The Michigan Educational Assessment Program (MEAP) since January, 1970, has provided information for the implementation of the third step of this model--Assessment of Needs. The Program has collected, analyzed, and disseminated information on district and school resources, student background, school and student academic performance, and school and district size. These data have been useful in describing certain aspects of Michigan education and have been used by decision-makers at both local district and state levels.

The educational assessment program has been evolving, and its operations have changed over the past five years to provide accurate and timely data to state and local educators and citizens. Thus, some variables have been redefined or dropped, and new variables have been added as attempts were made to understand the factors affecting education.

Between 1970 and 1973, the assessment program revised the achievement variables to update their content, modify individual test items, or otherwise improve the design. However, in the school year 1973-74, the program made a

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[1]The reader may refer to: A Position Statement on Educational Accountability (Michigan Department of Education, 1972).

revolutionary change from norm-referenced to objective-referenced tests. The present year will also see a major change--namely, the introduction of a state-wide first grade assessment.[2] The development and adoption of these tests is a direct outgrowth of the State Board of Education's educational planning model.

The Development of Performance Objectives

As has been indicated, the educational management model begins with a clear statement of educational goals. These goals can be found in The Common Goals of Michigan Education which was approved and published in 1971.

All goal areas must be further defined, however, to permit measuring the extent to which they are successfully attained. This definition stage identifies certain indicators directly related to a specific goal area and for which accurate data may be collected. In the case of the academic goal areas, greater definition is achieved by specifying learner performance objectives.

To accomplish specification of these objectives, Grade Level Commissions were established in November, 1971. These Commissions were composed of teachers, curriculum specialists, school administrators, and lay citizens who were nominated for membership by various professional and civic organizations. These groups were given the responsibility of reviewing performance objectives then being developed by various referent groups in eight basic skill areas. The referent groups developed draft objectives in art, communication skills (including foreign language), health education, mathematics, music, physical education, science, and social studies. Preprimary objectives appropriate for entry level first graders and directed toward the cognitive, affective, and psychomotor domains were also developed. These objectives form the basis for

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[2]For a discussion of the rationale for the first grade assessment, refer to: Michigan Educational Assessment Program: Grades to be Assessed (Michigan Department of Education, 1974).

the new first grade educational assessment to be introduced this year.

The State Board of Education has reviewed and approved each of these sets of objectives. Draft versions of the objectives were distributed to all school districts during the school year 1973-74. The approved versions of the objectives are currently being printed and distributed. With the collection of data on these objectives, the Department entered a new phase in the development and refinement of these objectives. The data collected will lead to the eventual refinement and clarification of the objectives.

Nature of Minimal Skill Objectives

The performance objectives approved by the State Board of Education are not meant to cover every aspect of instruction but are, instead, minimal skill objectives. These objectives are ones for which it is desirable to have most students attain. A local district should expect to supplement these objectives with others in order to provide an adequate curriculum.

Unfortunately, the nature of minimal objectives was frequently misunderstood during the last school year. The Department of Education did not expect--based on empirical data--that the objectives would be attained by 90 to 100 percent of the state's students in the 1973-74 assessment. Indeed, available evidence suggested that attainment rates would vary among the objectives. However, given present information, the Department's position is that the objectives are worthy of attainment as soon as possible. A minimal objective, therefore, is one which students should be able to attain as soon as possible.

The Development of Objective-Referenced Tests

Along with the effort to develop performance objectives in the basic skills areas, the State Board and the Superintendent of Public Instruction directed staff in 1972 to develop objective-referenced tests for use in the educational assessment program. These tests were developed to measure some of

the performance objectives in reading and mathematics, and successfully piloted during the 1972-73 school year in five Michigan school districts.

In the 1973-74 assessment program, the new objective-referenced tests were used. The tests measured a portion of the total set of objectives--23 reading objectives and 35 mathematics objectives at grade four and 23 reading objectives and 45 mathematics objectives at grade seven. Every participating student took the entire assessment test battery covering these objectives.

After reviewing the state-wide test results and comments received from educators across Michigan, some of these objectives were removed from the 1973-74 assessment tests. These objectives were removed because the items designed to measure the objectives did not meet expectations. (The specific objectives removed and rationale for their removal are contained in APPENDIX A.) Additionally, other changes were made in the remaining test items to improve the measurement of the objectives.

The new first grade assessment, described later in this report, was developed in a similar fashion. The Department of Education worked cooperatively with American Institutes for Research in Palo Alto, California, and four local school districts: Detroit, Pontiac, Waterford, and Gwinn. Test items were written by educators in these districts and pretested during the 1973-74 school year.

State-wide Assessment Item Tryouts

The 1974-75 educational assessment will, for the first time, gather pilot data on new test items developed for selected science and mathematics objectives (see APPENDIX B). The data will be collected from a state-wide sample of students in the fourth and seventh grade.

The purpose of administering these items is to gather essential data

on the psychometric properties of the test questions, not to gather individual pupil or state-wide data on the attainment of the objectives for reporting purposes.

These new test items were written as part of a cooperative effort between the Department of Education and approximately thirty school districts. These districts are assisting the Department build a file of test items which should prove useful for selecting items for future assessment tests in addition to being a resource for local educators in conducting local needs assessments.

First Grade Educational Assessment

The first grade educational assessment will be introduced during the 1974-75 school year. This assessment is considered by the State Board of Education to be a pilot project, and Michigan educators are cautioned to view it in that regard.

The first grade component will be different from the fourth and seventh grade components because of the unique requirements of administering objective-referenced tests to students at this age. The tests must be administered either individually or in small groups. This could require enormous amounts of teacher time unless restrictions are placed on the number of items used per objective, the number of objectives tested, and the type of data output expected.

This problem was solved in the present instance by gathering only a sufficient amount of data to yield state-wide data and by limiting the objectives measured to forty-eight. Additionally, the tests will be administered in a state-wide sample of schools--not all schools. Test administrators in the selected schools will have to invest a small amount of time in collecting the data but will gain individual pupil data on the one or two

objectives tested in any particular classroom in addition to contributing to the statewide data.

The test results for the state-wide sample will yield reliable data on the objectives tested. This information will be useful to educators and citizens in improving the test items and assessment procedures, in determining the extent and nature of educational needs as reflected by these objectives, in revising the objectives themselves, and in selecting objectives to be tested in all schools in 1975-76.

SECTION I

OBJECTIVES OF THE 1974-75 MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM

The major purpose of the Michigan Educational Assessment Program is to provide information to citizens and educators with which they can make educational decisions. The underlying assumption of the program is that informed citizens make better educational decisions. Within this broad purpose is imbedded three specific objectives which are discussed in this section.

Objective One

The first objective of the MEAP is to provide the State Board of Education, the Executive Office, the Legislature, and citizens with data describing the levels of basic skills attainment and other relevant descriptive data about each of Michigan's schools and school districts.

As has been stated, the state's citizens are often placed in a position of having to make decisions regarding education. Such decisions will vary, of course, depending upon whether one is a typical citizen deciding upon a local school millage issue or a state legislator deciding upon an important school financing law. In either case, people are capable of making better decisions given access to quality information, and the MEAP can provide some of this information.

The assessment program collects, analyzes, and reports descriptive data about each K-12 school district on twenty-two different variables. These data are reported in various ways. In the case of the resource measures, racial ethnic minority status, drop-out rate, and size, a single value is

reported. These values are also reported in terms of percentile distributions of Michigan school districts.[3]

In the case of the achievement data in reading and mathematics, special reporting techniques have been developed which are unique to the nature of objective referenced tests. Essentially, these reports show the percent of students who have attained the various minimal performance objectives.

Objective Two

The second objective of the MEAP is to provide local educators with specific information about the levels of basic skills educational attainment of students and of other relevant descriptive data for their own schools and school districts.

While the provision of data to local educators has always been a feature of the assessment program, the 1974-75 MEAP will continue an effort begun in 1973-74 to concentrate on this dimension. It is felt that if education is going to continue to improve in the state it will do so more effectively when the individual classroom teacher is considerably involved in the process and has detailed information on student achievement available. Given this information, the teacher can plan proper instructional activities for the students who need them.

The 1974-75 MEAP will provide these needed data for the classroom teacher by its use of objective-referenced tests and by reporting data on both an individual and a classroom basis. Hence, for each of the objectives measured, the teacher will have detailed analyses of how each pupil performed on each test question and which objective the pupil has attained. These data

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[3]This also applies to the reporting of the Word Relationships test which is an optional part of the 1974-75 assessment program.

will be summarized for the whole classroom to provide an overall picture of the educational skill levels of the total group.[4]

Additionally, similar summary data (plus the resource and other descriptive variables) will be aggregated and reported for the school building and the school district. When combined with knowledge about performance levels of the state as a whole on the achievement measures and percentile norms for the other descriptive data, local administrators will have a powerful tool at hand for understanding their district better. Specific areas of need can easily be identified within the parameters of the included performance objectives, and appropriate actions can be planned.

Since so much student achievement information will be reported on an individual basis, local educators will be presented with a unique opportunity to involve students and parents in the educational program by sharing results of the tests with them. Thus, students and parents can be encouraged to join with teachers to plan programs to meet individual needs. Because of the importance of communicating test results to parents, the Michigan Educational Assessment Program will attempt to develop and pilot appropriate parent reporting methods this year. It is anticipated that such methods will be tried out in several districts to ascertain which method or methods might be used as a regular feature of the program in the future.

Local educators are encouraged to share student data with the individual pupil and his parents and to use it as a basis for cooperative instructional planning. Further, the Michigan Department of Education prefers that school and district data be released and interpreted to the public by local educators if at all possible.

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[4] This applies only to the every-pupil portion of the assessment tests.

Objective Three

The third objective of the Michigan Educational Assessment Program is to provide information regarding the progress of the Michigan educational system as a whole and the progress of its school districts and schools over a period of years to the State Board of Education, the Executive Office, and the Legislature, and citizens.

Prior to the initiation of the assessment program, there was little or no information on achievement levels of students across the state's various school districts. It was not possible to trace longitudinal progress--or lack of it--in the state's educational system. Thus, one could not observe changing trends in the equalization programs or in student performance.

The advent of the MEAP has made such analyses possible. Even though the tests for the first four years of the program were somewhat different in content, certain measurement techniques have made it possible to trace educational progress from 1970 to 1973.

The change to objective-referenced tests has created a break in the continuity of longitudinal analyses since the previous normative tests do not yield the same type of information as the objective-referenced tests. Such analyses will again be possible in the future as measurement on selected objectives is repeated from year to year. For example, progress data comparing 1973-74 to 1974-75 will be available this year since the majority of objectives to be tested is unchanged.

SECTION II

PROCEDURAL ASPECTS OF THE 1974-75 MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM

The 1974-75 Michigan Educational Assessment Program differs in several significant ways from that of 1973-74. The major differences occur because of the addition of the first grade assessment on a pilot basis and the use of statewide tryouts of selected mathematics and science test items. These efforts require completely different procedures than the every-pupil testing at the fourth and seventh grade levels. The reader is cautioned to carefully study the following pages to understand the different dimensions of the Program this year.

As in the 1973-74 school year, the Michigan Educational Assessment Program will be conducted by Research, Evaluation, and Assessment Services (REAS), Michigan Department of Education, with the assistance of Westinghouse Learning Corporation/Measurement Research Center, Iowa City, Iowa. The REAS Advisory Council and the Council on Elementary and Secondary Education provide advice about the program as do educators in informal ad hoc groups and in regional meetings. The State Board of Education provides policy directions.

All public school districts with pupils in grades four and seven will be included in the 1974-75 program, and all of their fourth and seventh grade pupils will take the assessment tests (with the exception of certain special education students as explained later). However, at the first grade level, only a sample of Michigan schools--not districts--which enroll first graders

will be included in the new first grade assessment in 1974-75.[5] The specific sampling methodologies are explained later in the section entitled "First Grade Sampling."

Assessment Measures

Resource Measures

Eight major categories of measures will be used in the 1974-75 program and include: (A) Human Resources, (B) District Financial Resources, (C) Percent Minority, (D) Dropout Rate, (E) Student Achievement, (F) Size Measures, (G) Attitudes (optional) and (H) Word Relationships (optional). Definitions for these variables may be found in the 1973-74 report entitled School and District Reports: Explanatory Materials. These definitions have not been changed for the 1974-75 program.

These eight groups of measures are not all aggregated and reported in the same way. They are variously reported at the state, district, school, classroom, and individual student levels. TABLE I shows the measures which are common to the first, fourth, and seventh grade assessments along with the level of aggregation and reporting for each. TABLE II shows the measures which are aggregated and reported only at the fourth and seventh grade levels while TABLE III shows the measures which apply at the first grade.

Achievement Measures

The 1974-75 program provides achievement measures for grades one, four, and seven. The measures at all three grades are objective-referenced tests which were constructed through cooperative efforts of selected school districts, technical support contractors, and the Department of Education.

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[5] In 1975-76, it is anticipated that all districts enrolling first grade students will be included and that all students will take at least some portion of the first grade assessment battery.

TABLE I

MEASURES COMMON TO ALL GRADE LEVELS OF THE MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM

Measures	Level of Aggregation and Reporting			
	State	District	School	Individual
A. Human Resources				
1. Professional Instructional Staff per 1,000 Pupils	X	X	X	
2. Teachers per 1,000 Pupils	X	X	X	
3. Average Years Teaching Experience	X	X	X	
4. Percent of Teachers with Master's Degree or Above	X	X	X	
5. Average Contracted Salary per Teacher	X	X	X	
B. District Financial Resources				
6. State Equalized Valuation per Resident Member (1972-73)	X	X		
7. Local Revenue per Pupil (1972-73)	X	X		
8. State School Aid per Pupil (1972-73)	X	X		
9. K-12 Instructional Expense per Pupil (1972-73)	X	X		
10. Elementary Instructional Expense per Pupil (1972-73)	X	X		
11. Total Current Operating Expense per Pupil (1972-73)	X	X		
12. Total Operating Millage (1972-73)	X	X		
C. Percent Minority				
13. Percent of Racial-Ethnic Minority Students	X	X	X	
D. Dropout Rate				
14. School Dropout Rate (1972-73)	X	X		

TABLE II

MEASURES AGGREGATED AND REPORTED ONLY AT THE FOURTH AND SEVENTH GRADE LEVELS

Measures	Level of Aggregation and Reporting			
	State	District	School	Individual
Student Achievement				
1. Word Relationships (Optional)	X	X	X	X
2. Reading	X	X	X	X
3. Mathematics	X	X	X	X
Size Measures				
1. Grade 4 Membership	X	X	X	
2. Grade 7 Membership	X	X	X	
3. Total Membership	X	X	X	
Attitudes (Optional)				
1. Attitude Toward Self	X	X	X	
2. Attitude Toward School	X	X	X	

TABLE III

MEASURES AGGREGATED AND REPORTED ONLY AT THE FIRST GRADE LEVEL

Measures	Level of Aggregation and Reporting			
	State	District	School	Individual
Student Achievement				
1. Cognitive (37 Objectives)	X			X[a]
2. Affective (6 Objectives)	X			X[a]
3. Psychomotor (7 Objectives)	X			X[a]

[a]Only for the first grade students in a participating school.

Since the measures for grade one differ substantially from those at grades four and seven, they will be discussed separately.

Grade One Measures. The entry-level grade one educational assessment instruments were developed in a project begun in 1973. Under the direction of the Department, four school districts (Detroit, Gwinn, Pontiac, and Waterford) wrote the test items. The test items were reviewed and edited by a technical support contractor (American Institutes for Research) and then tried out in the four school districts. The items were revised based both on teacher comments and reviews by teachers and specialists. The final instruments were produced by the technical support contractor following specifications approved by the Department.

There are forty-four separate tests measuring forty-eight of the pre-primary performance objectives approved by the State Board of Education. This constitutes a portion of the total set of objectives and includes objectives in the cognitive, affective, and psychomotor domains. The objectives to be tested are shown in APPENDIX C.

No teacher will give all of the forty-four tests covering the forty-eight objectives but will instead administer only one test covering no more than two objectives.

Grade Four and Seven Measures. The fourth and seventh grade tests to be used in the 1974-75 program were written and validated in the 1972-73 school year and used statewide in the 1973-74 program. Based on the results of the 1973-74 assessment and with the advice of professional organizations and curriculum specialists, some objectives and test items were deleted. Other items were clarified by word changes or improvements in accompanying artwork. The set of fourth and seventh grade performance objectives included in the 1974-75 Program is given in APPENDIX D while a list of the deleted

objectives is shown in APPENDIX A as has already been mentioned.

The content of the fourth and seventh grade mathematics and reading tests is discussed below.

Mathematics. The fourth grade mathematics test measures thirty minimal performance objectives. The seventh grade test measures forty objectives. There are five multiple-choice test items for each objective in both tests. Each test will continue to have several items that are to be read to the student by the test administrator.

Reading. The fourth grade reading test measures nineteen performance objectives, while the seventh grade test measures twenty p rformance objectives. As with the mathematics tests, there are five test items measuring each performance objective at both grades. The fourth grade test contains several items that are to be read to students by the test administrator.

Experimental Item Tryout. A special feature of the 1974-75 educational assessment is the inclusion of experimental items in science and mathematics. These items, to be administered only at the fourth and seventh grade level, will not involve all districts or all students in the state. Instead, a sample of schools containing fourth and seventh grades will be selected, and every student in the designated school will take the few extra questions.

Fewer than twenty percent of the schools containing fourth and seventh graders will participate in this special testing. It will require no more than thirty minutes of additional time. The results will only be aggregated at the state level and will be used to select items appropriate for future educational assessment tests.

Word Relationships. The word relationships test has heretofore been a mandatory portion of the fourth and seventh grade educational assessment.

However, during the 1974-75 school year, this test will be available on an optional basis. The test will be offered at no cost to local districts as long as it is administered during the time period set aside for the assessment program. If it is to be given, it must be given to all fourth and/or seventh grade pupils (with the exception of those pupils excused from taking the regular test).

The word relationships test measures knowledge of the meanings of words and understanding of relationships among words and concepts. This is accomplished through use of verbal analogy items. While test experts agree that verbal analogy items yield a measure that reflects both ability and achievement, they are divided as to the balance between these two components. The word relationships score is not considered to be very sensitive to instruction in the short run and may be considered for purposes of this program as a test of developed verbal ability. The word relationships instruments are identical to the corresponding instruments used in the 1973-74 program.

The results of the administration of the word relationships test will be provided on the regular report forms which will be similar to those used in 1973-74. Reports will consist of individual pupil results as well as summaries at the classroom, school, and district levels.

Attitude Tests. The 1974-75 educational assessment will again include an attitude test on an optional basis as was done in 1973-74. The attitude test is a reliable measure of two dimensions: 1) attitude toward school and 2) attitude toward self. The test is designed for group and not individual use. It is an anonymous test, and no individual student data are available. The test utilizes thirty questions--fifteen for each attitude dimension.

The test will be available at no cost to the district under the same conditions as apply in the case of the optional word relationships test

described above. Reports of attitude test results will be provided on the same schedule as the reports of other educational assessment results, and will consist of summary information at the classroom, school and district levels. No individual results will be provided on these anonymous questionnaires. Item analysis data will be provided for all reporting groups. A statewide summary and item analysis will be provided to participating districts after all data have been processed.

Assessment Test Administration

Scheduled Dates of Test Administration.

Because the first, fourth, and seventh grade educational assessment instruments measure minimal performance objectives which all students should attain by the beginning of first, fourth and seventh grades, it is important that the date of testing be early fall. This will provide local educators time to use the results of the tests to provide for specific educational needs of students when the results are returned.

The time between September 23rd and October 4th (two weeks) has been designated for administering the educational assessment instruments. In addition, the time between October 7 and October 11 (one week) has been set aside for make-up testing.

While few limitations are imposed on the scheduling of the battery within the designated period, three main considerations should be borne in mind. First, by scheduling the battery early in the two-week period, more time will be left to hold a make-up session for students. Second, it is generally believed that pupil performance on achievement batteries is adversely affected by such things as "Monday moring stupor" and "Friday afternoon itch." Last, to prevent student fatigue, no testing session should

last more than one hour. To the extent that these conditions can be predicted, it seems wise to schedule the battery to avoid them.

Each district will need to review its own calendar to determine the best test administration schedule for its own pupils. Districts with irresolvable time conflicts should notify staff of the educational assessment program, Department of Education (Telephone: 517--373-8393).

Local District Administration Responsibilities.

It is the responsibility of the local district officials to arrange for facilities, allocate time, and determine the other administrative necessities involved in the administration of the assessment instrument. The educational assessment instruments may be administered by the school principal, classroom teacher, guidance counselor, or other qualified persons. The tests should be administered in the regular classroom at the first and fourth grade levels, but at the seventh grade level, a large group room such as the library or study hall may be used. In any case, adequate lighting and work surfaces should be provided, and the facilities should be free of extraneous noises and distractions. In some schools a public address system has been used effectively to provide directions to classroom groups working under the supervision of teachers.

The persons chosen to administer the battery should be selected by local school officials, notified well in advance of the administration date, supplied with the necessary materials, and trained in the use of the materials.

Shipment of Materials

In all K-12 districts, the assessment battery and necessary materials will be shipped on or about August 15, by Westinghouse Learning Corporation, Measurement Research Center (MRC) to the local district coordinator who has been designated by the school superintendent.

In non-K-12 districts, the materials will be sent by Measurement Research Center to the intermediate district coordinator who will perform the functions of the local district coordinator for the non-K-12 districts in the intermediate district.

A school coordinator for each school within the district will need to be appointed by each local district coordinator. The school coordinator is responsible for all materials supplied to him by the local district coordinator.

After the administration, the assessment booklets and answer sheets, both used and unused, are to be returned to the local district or intermediate district coordinator from whom they were secured. The coordinator will be responsible for all materials supplied to him, and for returning the proper materials to MRC.

Students To Be Tested

Fourth and Seventh Grades. All fourth and seventh graders receiving regular classroom instruction in reading and mathematics are to be tested. Included in this group are students who receive itinerant services (for example, hard of hearing, physically handicapped, educable mentally retarded, emotionally disturbed, those with speech impediments) as well as regular instruction. Handicapped students who are in special classes for the handicapped should be tested if the testing can be completed without verifiable physical or mental strain to such students.

Students in nongraded programs who can be identified as fourth or seventh graders should be tested. Students whose grade level cannot be determined should be included if they are in their fourth or seventh year beyond kindergarten.

Fourth and seventh grade students who attend public schools on a

shared time basis from nonpublic schools should take the assessment battery if they are in the public schools for instruction in reading and mathematics. If instruction in only one of these areas is provided by public schools, the student may, at the option of the local district, (1) take only those aspects of the battery for which he receives public school instruction (2) be given the entire battery, or (3) be excluded from taking any of the tests. Non-public school first grade students may be included at the option of the local district.

First Grade. In general, the rules described above for fourth and seventh grade will also apply at the first grade. Schools selected to participate in the first grade assessment will administer the assigned test(s) to all first graders enrolled. The statewide aggregation will only include data as specified in the sample design.

Students Not To Be Tested. All students who are confirmed Type A mentally handicapped are not to be tested unless such students participate in regular classroom programs and can be tested without verifiable physical or mental strain. Other handicapped students who receive instruction only in special classes may be excluded from testing at the discretion of the local district.

Test Timing

Grades Four and Seven. The reading and mathematics objective-referenced tests used in the 1974-75 program are untimed, allowing students to complete the tests at their own pace. Generally fourth and seventh grade students will be able to complete both achievement instruments (mathematics and reading) in from two to four hours. Experience has shown that over ninety percent can complete the tests in that amount of time.

The untimed nature of the mathematics and reading tests will allow

testing periods to be scheduled to fit class periods, particularly at seventh grade. The time needed to complete the test by all students depends on how quickly they work, as well as time needed for questions, directions, and so forth. More detailed information will be included in the Assessment Administration Manual which will be provided with the assessment materials to be received by the end of the second week of September.

Grade One. The tests to be used at grade one are also untimed, with the teacher establishing the appropriate pace. The tests fall into two categories: (1) those that are administered to small groups, and (2) those that are individually administered. In most cases, a single test administration of any small group test can be completed within twenty minutes. A single administration of any of the individually-administered tests can be completed within five minutes. Of course, the total testing time depends on the number of students in the classroom, as well as the pace at which each student works. It is anticipated, however, that no first grade teacher will need to spend more than a total of about three hours of time, including pre-administration reviews of the test, test administration time, and post administration completion of answer sheets.

Statewide Standardization of Administration

The superintendent in each K-12 district has been asked to designate a local district coordinator. It will be the responsibility of local district coordinators to: (a) receive the materials; (b) distribute them to buildings; (c) train the test administrators; (d) collect the used and unused materials (both the answer sheets and the booklets); (e) destroy (through recycling if possible) extra used and unused booklets and unused answer sheets; and (f) prepare for return to Westinghouse Learning Corporation/Measurement Research Center the completed answer sheets and other required materials as

requested in the Assessment Administration Manual. In addition, the coordinator will answer (or relay to the Department of Education) questions that arise in his district concerning the program, the materials, or their intended use.

In non-K-12 districts, the function of the local district coordinator will, in general, be performed by a coordinator designated by the intermediate district superintendent.

Three manuals to assist these individuals concerned with the assessment program will accompany the materials: (a) the Local District and Intermediate District Coordinator's Manual; (b) the School Coordinator's Manual; and (c) the Assessment Administration Manual (different for grades 1, 4, and 7). The procedures outlined in these manuals attempt to ensure a statewide consistency in the administration of the assessment battery.

In 1973-74, Department staff monitored the administration of the educational assessment battery in a sample of school districts. The reports indicated that the administrations were carried out smoothly. In 1974-75 a sample of school districts will again be monitored in order to assist district officials to maintain uniformity in administration. As in 1973-74, these monitors will be staff members of the Department of Education.

Sampling in the Assessment Program

As has been mentioned elsewhere in this report, the 1974-75 educational assessment program will utilize sampling procedures for the first time. These procedures are being used to generate reliable statewide data without having to test each student on all of the test items.

The sampling procedures will be applied at the first grade level for the entire assessment of that grade. For the fourth and seventh grades,

the sampling procedures will be applied only to the science and mathematics test items being pretested for possible use in future tests.

These samples are being constructed by Research Triangle Institute, Raleigh, North Carolina, in cooperation with the Department of Education.

The first, fourth, and seventh grade samples will be drawn at the school level. That is, a list of schools which contain these grades will be compiled and from it will be randomly selected the necessary number of units. Within a selected school, there will be no further sampling of classrooms or students. Every student within the appropriate grade level in a selected school will take the single test assigned to that school.

The first grade assessment tests are divided into forty-four test forms. At the fourth grade, there are fourteen test forms, and at the seventh grade there are twelve. For purposes of deriving adequately reliable statewide data, approximately 1200 student responses (minimum) are needed for each package. Because of differences in sizes of Michigan schools, however, the samples actually include more students than this minimum number.

TABLE IV shows the number of test forms, schools per form, total number of schools, and approximate number of students to be included in the assessment samples. As can be seen, many thousands of Michigan students will be taking part in the statewide sample.

Reporting of Results

Type of Data to be Generated

The results of the objective-referenced tests to be used in 1974-75 at grades four and seven (in mathematics and reading) will be presented much the same as the results of the mathematics and reading tests used in the 1973-74 Program. The following types of information will be reported

TABLE IV

NUMBERS OF TEST FORMS, SCHOOLS, AND STUDENTS COMPOSING THE 1974-75 MEAP SAMPLE

Grade Level	Number of Test forms	Schools Per Form	Number of Schools	Total Number of Students
One	44	26	1144	77000[a]
Four	14	23	322	20650[a]
Seven	12	14	168	30000[a]

[a]approximation.

for each student: (1) whether or not the student correctly answered each test item; (2) the number of items correctly answered for each objective; (3) and whether or not the student has attained each objective.

Information to be reported at the classroom, school and district level includes: (1) the percent of students answering 0, 1, 2, 3, 4, or 5 of the five items correctly for each objective; and (2) the percent of students who attained each objective. A listing of the students in each classroom who attained each objective will also be provided.

For the first time, it will be possible for seventh grade mathematics and English teachers to receive separate copies of the appropriate assessment results. The Individual Student Report form for grade 7 will be perforated so that the mathematics test results can be sent to one teacher and the reading results sent to another one. Also, the classroom listing summaries will be printed separately for the English and mathematics teachers. In order to make this possible, it will be necessary for students to code

their mathematics teacher and English teacher on their answer sheet. More details on this will be provided in the Grade 7 Assessment Administration Manual.

Because of the sampling procedures used, no first grade results will be returned to teachers, schools or districts. Each participating teacher will score each student's answers and record them on a two-part answer sheet. The teacher will then keep a copy of the answer sheet as a personal reference and school record and will return the original to the MEAP Scoring Service. This is made possible by a two-part answer sheet. Because only statewide results will be compiled from the 1974-75 program, no other results will be released publicly.

Availability of Results.

It is planned that data on individual students, classrooms, schools, and districts will be reported by mid-November, depending on receipt of the completed answer sheets by Westinghouse Learning Corporation (the MEAP Scoring Service). It is anticipated that answer sheets can be processed and the student, classroom, school, and district results returned to local districts within four weeks of receipt by the MEAP Scoring Service. Reports regarding groupings of districts or schools will follow at a later time. Two booklets of explanatory materials will accompany the results. One is designed primarily to help teachers interpret individual student and classroom results. The other is designed to help administrators interpret the school and district summaries of the results.

Optional Reports

There are two optional methods of reporting assessment results which are available to each school district in addition to the reports mentioned earlier. The first option is the reporting of seventh grade results according

to feeder elementary school. This option is available at no cost to the district and must be elected at the time the student answer sheets are returned for processing. The district will need to instruct students to grid in the special code for the elementary school they attended. This code is the official four digit school code assigned to each school by the Department. Each district will be supplied a list of these schools with the assessment materials. A summary report then will be returned for each feeder elementary school.

The second optional reporting method is being provided to school districts who wish to investigate relationships between assessment results and other educational variables. A single column with digits of zero through nine (labeled "Research Use Only") will be provided at both fourth and seventh grades for school districts to use as desired. This option must also be selected at the time answer sheets are returned and will be at the local district's cost. More information on procedures for both options and costs for this latter option will be provided in a letter sent prior to the assesament test dates to each local school district

Interpretation Assistance

The Michigan Educational Assessment Program staff attempt to be of assistance to local school district personnel in interpreting the assessment data received by the district. Each year, the program includes five basic reports which describe the program in some detail:

1) Objectives and Procedures
2) Individual Student Report
3) School and District Report
4) Statewide Summary of Results
5) Technical Report

Last year, these five reports were supplemented by two color filmstrip/tape speaker's kits entitled:

1) "Michigan's New Teacher's Aid" and
2) "Interpreting the Results of the 1973-74 Michigan Educational Assessment Program"

Regional meetings were also conducted on three occasions by MEAP staff to provide information to local school personnel.

The Program will again follow somewhat the same procedures which worked so well last year. These are:

1) the publication of the five basic reports,
2) the design and production of a new filmstrip speaker's kit to be sent to each district, prior to the administration of the tests,
3) briefings for local district coordinators
4) workshops for local district administrators in the interpretation and utilization of assessment results, and
5) individual consultation with districts.

Notification of the workshops and briefings is normally sent to district superintendents well in advance of the appropriate dates. All reports are routinely mailed in varying quantities to each school district.

It must be recognized that the small staff of the educational assessment program can never communicate directly with each local district teacher or building principal. The MEAP approach, therefore, is to provide information and assistance to certain key people in each district who can then assist others. This approach effectively multiplies the communication power of the MEAP staff and can lead to the desired level of understanding and utilization of the program data.

APPENDIX A

OBJECTIVES REMOVED FROM THE 1973-74
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM

Grade 4, Mathematics

16.	AR-I-B-79	Given any three-digit number, the learner will write expanded notation to 1,000, first by using place value words and then by using numerals.
23.	AR-II-B-6	Given a word problem read by the teacher, involving addition or subtraction combinations to 10, the learner will identify the operation and the sum or difference.
29.	AR-III-D-1	Given groups of less than 13 objects and a statement (1/2 of ___, 1/4 of ___), the learner will identify the group that shows the appropriate fractional part of the whole.
30.	M-I-A-5	Given rulers specially scaled in inches and half-inches, the learner will identify the measurement of objects to the nearest inch.
35.	AL-1	Given a statement of equality involving addition or subtraction facts and a placeholder for the sum or difference, the learner will supply the sum or difference.

Grade 4, Reading

3.	3.1	Given a reading selection at the third grade level, the learner will answer multiple choice questions with words and/or phrases extracted from that selection.
14.	9.3	Given a reading selection at the third grade level, the learner will correctly answer a series of multiple choice questions relating to the sequence of events or ideas presented in the selection.
15.	10.2	Given three or more selections at the third grade level, the learner will choose the two most alike in the mood expressed.
23.	*	Given a reading selection at the third grade level, the learner will correctly answer a series of multiple choice questions relating to motivation.

*This objective was omitted from the reading performance objectives after the deadline established for test development.

Grade 7, Mathematics

28.	M-I-A-10	Given rulers specially scaled in quarter inches or eighth inches, the learner will measure objects to the nearest quarter unit.
34.	M-II-B-8	Given two money values, the learner will choose the approximate sum or difference to the nearest dollar or ten cents.
38.	G-I-B-3	Given models of lines or line segments, some of which are parallel, intersecting, and perpendicular, the learner will identify and name each.
44.	AL-10	Given a verbal exercise involving a number in a single operation the learner will write a related algebraic expression.
45.	P-9	Given a coordinate system using whole numbers and/or letters and given 3 pairs of coordinates, the learner will locate the points.

Grade 7, Reading

3.	19.1	Given a reading selection at the sixth grade level in which every fifth word has been replaced with a blank, the learner will choose the exact word appropriate to the blank space at 50% accuracy.
4.	19.2	Given a reading selection at the sixth grade level, the learner will answer multiple choice questions with words and/or phrases extracted from that selection.
20.	30.2	Given three or more selections at the sixth grade level, the learner will choose the two most alike in the mood expressed.

APPENDIX B

MATHEMATICS AND SCIENCE OBJECTIVES
PRETESTED IN THE 1974-75
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM
Grade 4

Mathematics

Objective Number		
1.	AR-I-A-5	Given a set of objects, the learner will recognize objects that are the same shape.
2.	AR-I-A-12	Given two sets of identical objects, one with many members and one with very few members, the learner will identify the set which has more members.
3.	AR-I-A-15	Given a pattern of two objects different in shape, the learner will recognize a duplicate pattern.
4.	AR-I-A-22	Given one series of three objects arranged in a pattern by shape, and the first object of the second series, the learner will complete the second pattern series.
5.	AR-I-B-2	Given a set of one to five objects the learner will identify another set having the same number of objects.
6.	AR-I-B-5	Given a picture of a set of objects, the learner will identify a picture having more members than the original picture.
7.	AR-I-B-6	Given a picture of a set of objects, the learner will identify a picture having fewer members than the original picture.
8.	AR-I-B-9	Given a set of objects, the learner will identify a set having one more object than the original set
9.	AR-I-B-11	Given a set of objects, the learner will identify a set having one fewer objects than the original set.
10.	AR-I-B-21	Given a set of numerals, 1 through 5, and the oral request for one of the numbers, the learner will identify the proper numeral.
11.	AR-I-B-33	Given a written numeral, 9 or less, the learner will identify the number which is greater in value.
12.	AR-I-B-34	Given a written numeral, 9 or less, the learner will identify the number which is less in value.
13.	AR-I-B-39	Given a line marked with congruent segments and labeled from 0-10 the learner will identify the appropriate number for a point on the line.

14. AR-I-B-63 Given any number of objects greater than 20 and less than 100 grouped into "tens" and "ones," the learner will identify the number of "tens" and "ones."

15. AR-I-B-66 Given a two-digit numeral, the learner will be able to identify it in expanded notation in two ways: as so many tens and so many ones, or as....+...., representing the value of the tens place plus the value of the ones place.

16. AR-I-B-76 Given an abacus with counters on the hundreds, tens and ones spindles, the learner will identify any three digit numeral illustrated.

17. AR-I-B-78 Given a hundred chart with the first twenty numbers and multiples of ten, the learner will identify the number belonging in any portion of the chart.

18. AR-I-B-80 Given sets of 2-digit numerals, the learner will identify that set arranged in ascending order.

19. AR-I-B-83 Given an array with members arranged in rows and columns, the learner will identify the cardinal number of the array.

20. AR-II-A-3 Given addition number sentences in horizontal form with sums up through 10, the learner will identify the correct number sentence, with or without the aid of counters.

21. AR-II-A-6 Given addition number sentences with sums through 18, the learner will identify the correct number sentences, with or without the aid of counters.

22. AR-II-A-8 Given addition facts written in either vertical or horizontal form, the learner will identify which arithmetic fact has the right answer.

23. AR-II-A-12 Given an addition exercise involving multiples of 10, the learner will identify the sum.

24. AR-II-A-13 Given an addition problem involving a two digit number plus a two digit number requiring no regrouping (carrying), the learner will identify the sum.

25. AR-II-A-14 Given an addition word problem read by the teacher involving sums to 10, the learner will identify the answer.

26. AR-II-B-5 Given a subtraction exercise in horizontal form using numbers to 10, the learner will identify the difference with or without the use of aids.

27. AR-II-B-8 Given a subtraction exercise in horizontal or vertical form using numbers to 18, the learner will identify the difference with or without the use of aids.

28. AR-II-B-10 Given two addends less than 10 and the sum, the learner will identify the related subtraction fact.

29. AR-II-C-3 Given a collection of equivalent sets, the learner will identify the multiplication sentence describing it.

30. AR-II-C-8 Given two whole numbers (0...9), the learner will identify the product.

31. AR-II-C-9 The learner will identify the product of any number and one.

32. AR-II-C-10 The learner will identify the product of any number and zero.

33. AR-II-C-12 Given a one-digit number and 10, the learner will identify the product.

34. AR-II-C-13 Given a one-digit number and (10,20,...), (100, 200,...), the learner will identify the product.

35. AR-III-A-17 Given a proper fraction with a denominator less than 6, the learner will identify a drawing that explains the fraction's meaning.

36. AR-III-A-20 Given a denominator, the learner will identify the numerator that makes the value of the fraction equal to <u>one</u>, with or without the use of aids.

37. G-I-A-1 Given a drawing of a circular, square, rectangular or triangular region, the learner will identify the name of the region.

38. G-I-A-3 Given pictures of various shapes, the learner will identify circles, triangles, squares, and rectangles as requested

39. AL-2 Given a statement of equality involving addition, subtraction, or multiplication facts and containing a placeholder, the learner will identify the missing number.

40. P-1 Given data recorded with tally marks, the learner will identify the greatest quantity.

Science

<u>Identifying</u>

1. 2.1 Given a set of pictures of two or three dimensional objects which contain two or more physical properties, the learner will select from the set the object exhibiting specific properties.

2. 2.2 Given a set of two and three dimensional objects that vary in property, the learner will select all object(s) with a specified common property.

3. 2.3 Given a set of two and three dimensional objects of several shapes (e.g., triangle, square, circle, ellipse, rectangle, prism, cube, sphere, etc.), the learner will select all objects of a specified shape.

4. 3.1 Given a picture of a set of objects exhibiting a common property, the learner will select the object which exhibits the property to the greatest (least) extent.

5. 4.1 Given sets of objects that vary in number the learner will select the set that is numerically larger or smaller than another.

6. 5.2 Given two classified sets of objects or organisms, the learner will identify a property which is common to only one set.

7. 5.3 Given a collection of objects and/or organisms, the learner will sort (classify) the items as living or non-living.

8. 5.4 Given a collection of objects and/or organisms, the learner will sort (classify) the items as natural or manmade.

Sequencing

1. 1.1 Given a set of objects, the learner will arrange them in sequence according to height, length, size, weight, etc., as requested.

2. 1.2 Given a set of objects, the learner will arrange them in sequence according to number.

3. 1.3 Given a set of pictures showing changes in an object (living or non-living) the learner will arrange them as requested.

Inferring

1. 1.1 Given an observation situation and sets of statements, the learner will identify the statements which are observations and those which are inferences, as requested.

2. 2.1 Given a set of observations concerning an incident, object or a situation, the learner will identify a valid inference concerning that incident, object or situation.

3. 3.1 Given an inference related to an observed incident, object or situation, the learner will select from a set of observations that which best supports the inference.

Processing Information

1. 1.1 Given a bar graph with a variable which changes over time, the learner can interpret the graph.

2. 1.2 Given a bar graph with a variable which changes over time, the learner will interpret the graph, identify trends and extrapolate.

3. 2.1 Given a set of objects the learner will identify those which exhibit a specific relationship.

4. 4.1 Given a set of experimental data, the learner will identify an appropriate prediction.

5. 4.2 Given a prediction based on observations, the learner will select from a list of activities that which would best confirm or negate the prediction.

Processing Information

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3. 2.1 Given a set of objects the learner will identify those which exhibit a specific relationship.

4. 4.1 Given a set of experimental data, the learner will identify an appropriate prediction.

5. 4.2 Given a prediction based on observations, the learner will select from a list of activities that which would best confirm or negate the prediction.

MATHEMATICS AND SCIENCE OBJECTIVES
PRETESTED IN THE 1974-75
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM
Grade 7

Mathematics

Objective Number		
1.	AR-I-B-90	Given any 4-digit numeral, the learner will identify expanded notation using place value words or numerals.
2.	AR-II-B-19	Given a subtraction example involving a two-digit number minus a two-digit number with regrouping, the learner will identify the difference with or without aids.
3.	AR-II-D-6	Given an open number sentence in multiplication using the basic facts only, the learner will identify any two factors to make the sentence true.
4.	AR-II-D-14	Given a single digit divisor and any dividend less than 100, the learner will identify the quotient and the remainder.
5.	AR-III-B-2	Given a set of labeled fractional parts, the learner will identify the result of adding two fractional numbers with like denominators of 2, 3, 4, 6, or 8 and with a sum greater than 1.
6.	AR-III-B-3	Given two fractional numbers with like denominators having a sum less than or equal to 1, the learner will identify the sum, with or without the use of fractional parts.
7.	AR-III-C-2	Given two common fractions with like denominators, the learner will identify the difference, with or without the use of fractional parts.
8.	AR-III-C-3	Given a set of labeled fractional parts, including several unit wholes, the learner will identify the result of subtracting a fractional number from a mixed number with like denominators of 2, 3, 4, 6, or 8 where no regrouping is necessary.
9.	AR-III-C-7	Given a whole number and a mixed number, the learner will identify the difference, with or without the use of fractional parts.
10.	AR-III-C-8	Given two mixed numbers with like denominators, the learner will identify the difference.

11. AR-III-D-2 Given a number sentence in the form: "Unit fraction 'of' whole number" (1/3 of 12) using denominators less than 9 and the whole number a multiple of the denominator, less than 40, the learner will identify the answer with or without the use of objects and identify the number sentence in the form "fraction X whole number = product."

12. AR-IV-A-2 Given a model of a fraction illustrating tenths, the learner will identify the decimal fraction illustrated.

13. AR-IV-A-6 Given a decimal fraction, the learner will identify it as an equivalent decimal fraction.

14. AR-IV-B-1 Given an addition decimal problem involving only tenths, the learner will find the sum using models.

15. AR-IV-B-4 Given an addition problem involving tenths and hundredths, the learner will identify the sum with or without the use of aids.

16. AR-IV-B-5 Given a subtraction problem involving tenths and hundredths, the learner will identify the difference with or without the use of aids.

17. AR-IV-B-7 Given a decimal addition problem in horizontal or vertical form involving whole numbers, tenths and hundredths, the learner will identify the sum with or without aids.

18. AR-IV-B-8 Given a decimal subtraction problem in horizontal or vertical form with whole numbers, tenths and hundredths, the learner will identify the difference with or without aids.

19. M-I-B-5 Given a region located on graph paper or some other grid, the learner will find the area by counting the number of square units.

20. M-II-B-6 Given a total purchase value less than $20, the learner will count out the change starting with the purchase value.

21. M-II-C-4 Given a table with the high and low temperatures expressed in Fahrenheit for each day of the week, the learner will identify the day with the lowest or highest temperature or will identify what the lowest or highest temperature was.

22. G-I-B-4 Given a simple closed curve, the learner will identify the exterior and interior regions.

23. AL-3 Given two numerical phrases, the learner will correctly compare the expressions by using = or ≠.

24. AL-9 Given a table of whole number inputs and outputs related by a single operation, the learner will identify the rule.

25. P-6 Given a set of data organized and tabulated, the learner will identify the best frequency table.

26. P-8 Given data to be graphed and a set of scales, the learner will identify the best scale for the data provided.

Science

Identifying and Classifying

1. 1.1 Given a set of living and non-living items the learner will distinguish the living from the non-living.

2. 1.2 Given a set of properties and a set of living and non-living things, the learner will identify those properties which apply only to living things.

3. 1.3 Given several non-living items or materials, the learner will identify those having an origin associated with life.

4. 2.1 Given a drawing of a living plant, the learner will identify the leaves, stems, roots and flowers.

5. 2.2 The learner will identify the basic function of the leaves, stem, roots and flowers of a plant.

6. 2.3 Given several small common animals, the learner will identify their gross structures.

7. 2.4 Given different animals in their regular habitat, the learner will recognize structures which are different among animals and identify the function of the different structures.

8. 3.1 Given different animals, the learner will identify at least one characteristic which could be used for placing one animal in a different category from the others.

Observing

1. 1.1 Given a set of observations regarding motion or growth of objects, the learner will identify differences in the rates of motion or growth.

2. 2.1 Given a stationary object on a moving vehicle, the learner will identify the object's motion relative to the moving vehicle and to the earth.

3. 2.2 Given a situation in which he is a stationary observer in a moving vehicle, the learner will identify his own motion relative to other objects.

4. 2.3 Given a simulated situation in which the learner is on the side of a road along which a vehicle proceeds carrying a stationary cargo, the learner will identify the motion of the cargo relative to the learner and relative to the moving vehicle.

5. 2.4 Given an object that is traveling faster than a second object and in the same direction, the learner will determine how fast either object is traveling relative to the other.

Measuring

1. 1.1 Given a metric ruler, the learner will determine the dimensions of a measurable object to the nearest centimeter.

2. 1.2 Given a set of graduated cylinders, the learner will distinguish between various volumes of liquid and identify the differences in volume in terms of the measure provided.

Processing Information

1. 1.1 Given a completed graph of plant height versus growing time, the learner will predict from the graph the height of the plant at a given time, in units specified on the graph.

2. 1.2 Given a completed graph of mass of water versus volume of water, the learner will determine from the graph a volume or mass greater than any plotted.

3. 1.3 Given a completed line graph of water temperature versus time in a heating range of 0^{o} Celsius and given a temperature between two plotted times, the learner will predict from the graph the time required to reach a given temperature.

4. 1.4 Given a completed line graph of the length of a spring versus a mass suspended from the spring, and given a mass greater than any mass plotted in the graph, the learner will determine from the graph the spring length corresponding to the given mass.

5. 2.1 Given an observation and a set of inferences, the learner will identify that inference which best accounts for the observation.

6. 3.1 Given an inference, the learner will identify the best way to test the inference.

7. 5.1 Given a description of a system, the learner will identify which variable can or cannot be controlled, as requested.

APPENDIX C

PREPRIMARY PERFORMANCE OBJECTIVES
MEASURED IN THE 1974-75
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM

Affective Objectives

Emotional Behavior

Recognize at least three of five basic emotions (fear, anger, sadness, joy, love) in self and others;

Recognize some basic causes of familiar emotional responses (e.g., sad, happy, angry, etc.).

Social Relationships

Identify several workers from different occupational areas in the community and tell something about their work.

Behavorial Response to Classroom Environment

Cooperation and independence (without help or demonstration) in following verbal directions for three or more sequential instructions.

Safety

Awareness of common hazards encountered in daily living (e.g., toxic household chemicals or substances, electricity, toxic plants, explosive and combustible substances, etc.);

Perform safely as pedestrians, as passengers in motor vehicles, and as tricycle operators.

Psychomotor Objectives

Gross Motor Behavior

Balance while walking (e.g., will be able to walk at least ten feet on a straight three-inch taped line without stepping completely off the line with either foot);

Balance while running (e.g., will be able to run to a target placed no more than twenty feet away without stopping or veering off a path approximately five feet wide);

Muscle coordination (e.g., will be able to jump with both feet rising together over a three-inch taped line);

Eye-hand coordination (e.g., given a bushel basket tilted toward him at a 45-degree angle and placed four feet in front of him, the child will throw a bean bag into the basket);

Touch or move parts of the body (e.g., head, arms, elbows, hands, legs, knees, feet) called for by the teacher.

Fine Motor Behavior

Digital coordination (e.g., place a three-quarter-inch button through a one-inch button hole);

Eye-hand coordination and lateral movement (e.g., given a large crayon and at least a two-inch model of two intersecting lines, will be able to copy the lines so that they intersect in some manner).

Cognitive Objectives

Language Development

Listen and react to another's oral language;

Given an oral stimulus requiring a specific bodily response (e.g., the game "Simon Says"), will provide the appropriate response;

Talk about a picture or a group of two or three related pictures;

Given three single syllable sounds, two of which rhyme, will select the two which rhyme;

Non-verbally imitate or role-play the simple action of people or animals;

Name likenesses and differences in pictures, objects, and shapes;

Recognize some letters of the alphabet;

Print first name correctly;

Recognize first name.

Classification and Ordering

Given an object of a specific color, will pick an object which is of the same color;

Group items on the basis of common function (e.g., things to eat with, things to wear, things to play with, etc.);

Group items on the basis of association (e.g., hammer and nail, shoe and foot, etc.);

Identify and group items on the basis of general classes or categories (such as furniture, animals, plants, etc.);

Given a set of ten objects of assorted color and shape, will pick out objects having specific combinations of the two attributes;

Given one series of three objects arranged in a pattern by color or shape and the first object of the second series, will complete the second pattern series.

Number-Numeration

Given a set of coins of a penny, nickel, dime, will pick and name each one;

Given a collection of five objects of varying lengths, will pick up the longest or the shortest as requested;

Given two objects of decidedly different weights, will hand to the teacher the one that is heavy or the one that is light as requested;

Given the directions "count to ten," will recite the number names from one through ten in the usual order;

Given cut out pictures of any two sets (from one to five members), will place the pictures of the sets in order, from that set with less members to that set with more members; then, will order the set pictures from more or less;

Given pictures of sets with 0-9 objects and number cards from 0-9 (using felt numerals, sandpaper numerals), will match the right numeral with the picture of the set having the same number of members;

Given dot pattern cards showing sets of 0-10 dots, will count while pointing to the appropriate dot card;

Given an assortment of cutout shapes including squares, triangles, rectangles and circles of various sizes randomly arranged, will select a given shape as requested.

Spatial Relations

Knowledge of concepts of position (such as on-off, over-under, on top of, in-out, into-out of, top-bottom, above-below, in front of-in back of, behind, beside-next to, by, between);

Knowledge of concepts of direction (such as up-down, around-through, forward-backward, to-from, sideways, across);

Knowledge of concepts of distance (such as near-far, close to-far from).

Temporal Relations

Ability to follow temporal commands (such as go, stop, at the same time, now, start, finish).